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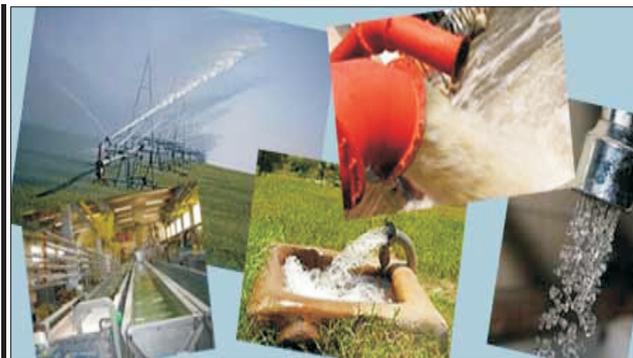
A STUDY OF WATER MANAGEMENT CURRICULUM ANALYSIS OF B. A. LEVEL COURSE.

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ABSTRACT

Water management education is a key theme that helps in developing a new ethic of water governance and management. It is essential for sustainable development. There are two objectives of this study: one is to evaluate the curriculum of B. A. level Geography course and the other is to evaluate the teaching-learning strategies adopted by teachers and students. The investigator applied the curriculum analysis technique to evaluate curriculum and semi-structured interview technique on teachers and student to collect the necessary information. The investigator on analysis of data concluded that water management is not taught at bachelor level degree course; however, some topics related to water have been included in the curriculum. The curriculum is theory



based and little emphasis is given on skill development. The teaching - learning strategies adopted by teachers are traditional lecture method and rote memorisation by students. The advanced teaching learning strategies like experiential learning, case study, identifying best practices, collaboration with community have been ignored completely.

KEYWORDS: Water management, curriculum, teaching - learning strategies.

1. INTRODUCTION:

Daigger (2008) stresses the need for closed - loop, energy neutral water systems, which

will require more reliance on local resources, better access to clean water and sanitation, and responsible management of nutrients in wastewater streams-all facets of the global quest for sustainability. Water management education is a key theme that should be taught at every level i.e. primary, secondary and tertiary level. It will help in developing a new ethic for water governance and management. However, there are several obstacles in providing water management education in a developing country like India. This education is essential for sustainable development and wise use of scarce water

resources. Water management education programme must apply multidisciplinary approach to conserve our scarce water resources. Water management will equip people with the knowledge, skill and value of conserving the available natural water resources. In broad sense water management education should include policy makers, schools, college, universities, vocational education and training, mass media and stakeholders in an effort to promote water sustainability. There should be links between those engaged in water management education at higher level and those working in school, vocational and training and community level. The UNESCO through its International Hydrological Programme (IHP)(2012) on water management emphasised on cross disciplinary approach to water management

education. Five workshops on water education were organised to identify the local needs, Thus UNESCO played a vital and leading role in water management education for the UN Decade of Education for Sustainable Development. The workshops identified the following objectives:

- Identify examples of best practices on water education in the region at all educational levels;
- Analyse examples of best practices to identify barriers and opportunities;
- Propose recommendations to enable effective water education in the region at all educational levels.

The workshops also developed summaries of case studies in the following areas:

- ✦ Tertiary education and professional development of water scientists, engineers, managers and decision makers.
- ✦ Education and training of water technicians
- ✦ Water education in schools
- ✦ Community education
- ✦ Water education for mass-media professionals

The workshops recommended the following outputs

- Recommendations for broader curricula, exemplar educational materials and case studies.
- Case studies, best practices and publications on water education.
- Guidelines for integrating water education related to sustainable development into the K-12 curriculum, with emphasis on "learning by doing" or "experiential learning" approaches.
- Production of guidelines, supported by practical examples, for community-based water education and media reporting of water issues (Bugliarello,2008).

NEED OF THE STUDY

As the global population continues to grow, the water we need is becoming increasingly scarce. Thus we must recycle water, search for new sources of water, use water more efficiently, and reduce losses in water distribution systems (Bugliarello,2008). Fresh and potable water resources are depleting day by day. Water is a life saving need of the society. Water is used for body consumption, bathing, animals, trees, agriculture and industrial productions. Water table is receding day by day, ice cap on mountains is reducing and rivers are drying up. Pete Loucks (2008) shows how models of complex water resources are being used in making decisions about water supplies in cities, the restoration of ecologically important areas, and water management in complex river system. Thus, there is need to conserve the natural resources of water through innovative techniques so as to maintain sustainable development. Thus the issue of water management should be given due importance in education programme. Therefore, we must review the curriculum of K- 12, higher and vocational education to strengthen water management strategies. Knowledge of water resources conservation and management is not sufficient. There is a need of developing the necessary skills of water management among the students through innovative teaching methods, case studies and experiential learning; Teachers should adopt the cross-disciplinary approach through team teaching. Teachers in collaboration with students should identify the best practices of water management. Keeping, the above mentioned factors in mind, the investigator chose the topic for investigation.

OBJECTIVES

1. To evaluate the B. A. level curriculum for Geography Course.
2. To evaluate the strategies of teaching-learning.

RESEARCH METHODOLOGY

The investigator investigated the B.A. (I, II and III) level course to know its theoretical and practical aspects. The investigator evaluated the strategies of teaching by teachers and learning of students through semi-structured interviews.

Some variables (suggested by UNESCO) were taken as bench mark for evaluating the curriculum and teaching-learning strategies. The variables are given below

- Inclusion of identifying the best practices adopted by local community for water management in the curriculum.
- Experiential learning opportunity
- Collaboration with local community
- Case studies and publications on water education.
- Cross-disciplinary approaches to education

The investigator gathered information from students through semi-structured interview.

ANALYSIS AND INTERPRETATION

The investigator found that about 99% teachers teach the water management topics through chalk and talk method i.e. lecture method. Very few teachers apply demonstration method. None of teacher adopts case study method. The bench mark suggested by UNESCO are not being implemented in educating the students by teachers. Opportunity for experiential learning is minimal. Teachers do not make arrangement for students and community interaction in their local environment. Teachers are not adopting the cross-disciplinary approach in teaching these topics. Most of the teachers could not explain the concept of cross-disciplinary approach properly. In the absence of collaboration with community, teachers could not identify the best practices prevalent in the local as well as global contexts. Most of the teachers said that little time is left for performing above mentioned activities due to semester system. They said that our education system is examination oriented and thus students are interested in securing good marks through rote learning. Thus the bench marks suggested by UNESCO face several challenges and obstacles in its implementation and adopting the proper teaching strategy. When asked about the challenges, they narrated (i) lack of adequate number of staff members, (ii) lack of equipments in the laboratory, (iii) lack of books on water management in the library, (iv) lack of training course and lack of network with experts in this field. The investigator found that teachers have lack of positive learning attitude too. Most of the teachers do not have reference books on these topics and were found least interested in adopting the teaching strategies as suggested by UNESCO.

LEARNING STRATEGIES OF STUDENTS

The investigator found that students learn through lecture in the college and revealed that lectures are monotonous and boring. They are not given opportunity to learning by doing or observing or interaction with society/community. Very few teachers teach through demonstration method. No case study is discussed or investigated by teachers or students, No best practices are discussed in the classroom. We are not given opportunity to witness the best practices being practiced elsewhere. There is no opportunity to interact with community and get apprised by ingenious knowledge of community about conserving the water resources. They revealed that benchmarks suggested by UNESCO are not being implemented in the college classrooms. It was found that most of the students learn from help books through rote memorisation. In this way they just acquire knowledge and not the skill of conserving and managing water resources.

EVALUATION OF CURRICULUM

The curriculum of B. A. (Geography) course revealed that no topic named as water management is included in the B. A. (Geography) course. Few stray topics like irrigation, drainage, river, underground water, glaciers, evaporation, condensation, precipitation, hydrological cycle, water pollution and conservation of natural resources which are somehow related to water or natural sources have been included into the Geography course for Bachelor level degree. Thus there is not even a single topic mentioned in the name of water management to be taught in Bachelor level course. Moreover weightage to theory is seventy (70%) percentage while weightage to practical in this course is thirty (30%) percent. While there is no weighing to field work, case study, identification of best practices and interaction with community / collaboration with community. Thus the students are deprived of experiential learning and social learning opportunities.

RESULT AND DISCUSSION

The curriculum of Bachelor level course shows that little importance has been accorded to water management education. The curriculum is theoretical based and ignore the skill based learning of the students. They are not given opportunity to observe and create their knowledge through their experience and learning by doing. They are also deprived of the knowledge and skill like communication and social skill which they may get by collaborating with community / society. In this process, students get the ingenious knowledge of the community which they are practising since a long time. Therefore, some field work in the form of project must be included in the curriculum at B.A. level. This kind of teaching-learning process will create interest of the students in their subject and inculcate creative and critical thinking among the students. This will improve their communication and social skill and enhance their employability, thus, there is need to enrich the curriculum, textbooks and teaching- learning strategies in order to strengthen the water management education and save the depleting sources of water.

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